**Introduction and outline of the shared work**

**Introduction of the project:**

This project proposal aims to explore the use of deep learning techniques for the detection and prediction of wildfires. Wildfires are uncontrolled fires that can cause significant damage to forests, wildlife, and human settlements. By leveraging deep learning algorithms and analyzing various data sources, we aim to develop an effective system for early wildfire detection and prediction, which can help in mitigating the impact of these devastating events. Problem Statement The increasing frequency and severity of wildfires pose a significant threat to ecosystems and communities worldwide. The current methods for wildfire detection and prediction often rely on manual monitoring and traditional techniques, which can be time-consuming and less accurate. Therefore, there is a need for an advanced system that utilizes deep learning algorithms to enhance the efficiency and accuracy of wildfire detection and prediction. The objective of this project is to develop a deep learning-based system for early wildfire detection and prediction, improving the efficiency and accuracy of current methods. Dataset: FlameVision Dataset for Wildfire Classification The FlameVision Dataset for Wildfire Classification is a comprehensive dataset specifically curated for the task of wildfire classification. It contains a large collection of images that depict various types of wildfires, including forest fires, grass fires, and bushfires. The dataset is annotated with labels indicating the presence or absence of a wildfire in each image. With over 10,000 images, the FlameVision dataset provides a diverse and representative sample of wildfire instances. This allows for the training and evaluation of deep learning models for accurate wildfire detection and classification. The images in the dataset have been collected from different sources, including satellite imagery, aerial photography, and ground-based sensors. The FlameVision dataset also includes additional metadata for each image, such as location information, weather conditions, and time of capture. This metadata can be used to further enhance the predictive capabilities of the deep learning models, enabling the prediction of wildfire occurrence based on environmental factors. By utilizing the FlameVision Dataset for Wildfire Classification, this project aims to develop a deep learning-based system that can accurately detect and predict wildfires in real-time. The system will leverage the rich information provided by the dataset to learn patterns and features indicative of wildfire presence, enabling early detection and timely response to mitigate the impact of these devastating events.

**Outline of Shared work**

Mohamed- Develop the streamlit application

Mahi- Modeling and Prediction

Pooja- Data Preprocessing and EDA

**Description of the individual work**

I develop the streamlit application and then deploy it. I created fourteen (14) pages in the streamlit app for easy navigation. These pages are:

1.Topic

2. Why

3. Wildfire definition

4. Video of wildfire

5. Fire Image

6. No fire image

7. Problem statement

8. Objective

9. Dataset overview

10. Models

11. prediction

12. Conclusion

13. Project summary

14. Thank you.

I did a power point presentation and then converted the slides into images and then uploaded them into our Github repository. I also upload a wildfire image for illustration. I watched video on how to do a streamlit app and I have the idea. I did not copy code from the internet, but I fully understood how to do it after watching several videos. The thing I was interested in was how create pages and how to reference an image, video in github so that it will display on streamlit app when a page is clicked. I use a lot of if else statements on the streamlit app to display the content of each page and then deploy it into the internet. For modelling and prediction part, I copied Mahi’s code and then paste it and link it up together with him for alignment and check for proper functionality of the streamlit app. I also wrote the code to display an interactive bar chart of the number of fire and nofire images on our dataset. I created different versions of the app. For example the first streamlit app, was name streamlit\_appv1, the second was streamlit\_appv2 , the third was streamlit\_appv3 and the last was streamlit\_appv4.

For the presentation, I spoke on the following areas: Topic, why, Wildfrire definition, Video of wildfire, Fire image and Nofire Image.

**Result, Summary and Conclusion:** I want to give a briefly overview of our result. We use three image recognition and classification networks which are RESNET50, CNN and VGG16. VGG16 was the best model after doing the comparison this is because, the CNN performs poorly due to the complexity of the task. The RESNET50 have high accuracy and a high loss value which tells us that there is overfitting but for the VGG16 it gives us high accuracy and the loss value is very low. This gives us the reason to select VGG16 as our best model.